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THE DESIGN AND DEVELOPMENT OF A BANJAR ADAT WEBSITE AS A DIGITAL IMAGE OF SOCIAL LIFE IN BALINESE COMMUNITIES

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Abstract

The rapid advancement of information technology has driven the need for digital transformation in traditional communities, including Banjar Adat in Bali, which plays a central role in regulating social and cultural life. However, the absence of structured digital media has limited the effectiveness of information dissemination, documentation, and representation of cultural identity. This study aims to design a conceptual model of a website-based information system as a digital representation of the social life of Banjar Adat communities. The research adopts a Research and Development (R&D) approach with a qualitative method in the needs analysis phase. Data were collected through observation, interviews, and documentation involving banjar administrators and community members. The system design process employs a prototype approach, including user needs analysis, system structure design, user interface (UI/UX) design, and feature modeling such as banjar profiles, activity calendars, announcements, and documentation galleries. The results of this study are in the form of a conceptual system design and interface prototype that align with user needs and reflect local cultural values. The findings indicate that the proposed design can serve as a foundational model for developing a website that functions both as an information medium and as a digital image of social life in Balinese communities.

Keywords: Banjar Adat, Digital Image, Information System, Social Life, Website.

INTRODUCTION

The rapid advancement of information technology in the digital era has driven transformation across various aspects of society, including the management of social and cultural communities. Digitalization has become an inevitable necessity to improve the effectiveness of information dissemination, activity documentation, and the preservation of local cultural values. In Bali, Banjar Adat is a traditional social institution that plays a significant role in regulating community life based on customs, culture, and collective values. However, information management within Banjar Adat is still dominated by conventional methods that are less efficient and have limited reach. This condition results in suboptimal dissemination of activity information, documentation, and cultural identity to the wider community, as explained by Febriyanti et al. (2025) regarding the limitations of digitalization in local communities. Therefore, technology-based solutions are needed to address these challenges effectively and sustainably.

Globally, the utilization of digital technology in cultural preservation has demonstrated a significant role in enhancing accessibility and sustainability of cultural values. Ajani et al. (2024) state that digital platforms can serve as strategic media for documenting and disseminating cultural practices to broader generations. In addition, Nur (2024) explain that the integration of technology in traditional communities can increase community participation and strengthen social identity. In Indonesia, the digitalization of traditional communities still faces challenges in terms of technological readiness and system design that aligns with local characteristics. Polisetty et al. (2024) indicate that information system approaches that do not consider cultural context tend to be less effective in implementation. In the context of Bali, the role of Banjar Adat is not only limited to social and cultural functions but also has the potential to act as a driver of community-based economic development. Bali's economic dependence on the tourism sector, which was significantly impacted by the COVID-19 pandemic, highlights the importance of strengthening community-based systems as a strategy for social and economic resilience. Joni et al. (2024) explain that the Smart Banjar concept serves as a strategic solution by integrating information and communication

technology to optimize the potential of indigenous communities. This concept emphasizes the importance of improving digital literacy, evaluating the level of technology adoption, and strengthening the role of Banjar in the digitalization of micro-enterprises and community-based financial systems. Thus, the utilization of technologies such as websites can serve as an initial step in building a digital Banjar ecosystem that supports sustainable community welfare.

Although numerous studies have been conducted in the fields of information systems and cultural digitalization, there remains a significant research gap. Imran (2023) indicate that most system developments still focus on technical efficiency without considering social and cultural dimensions. On the other hand, Sihotang et al. (2026) reveal that local-level information systems have not fully incorporated elements of local wisdom in their implementation. This condition suggests that holistic approaches integrating technical, social, and cultural aspects are still limited. Therefore, further research is needed to bridge this gap through the development of information systems based on local values.

Based on this background, this study aims to design a conceptual model of a website-based information system as a digital representation of the social life of Banjar Adat communities in Bali. This study also aims to identify user needs and formulate a system design that integrates information, documentation, and cultural representation. The proposed approach is expected to produce a system design that is not only functional but also relevant to the characteristics of traditional communities. In addition, this research seeks to provide solutions to the limitations of information media faced by Banjar Adat. Thus, the designed system can serve as a foundation for developing an effective and contextual website.

The problem-solving approach in this study is carried out using a Research and Development (R&D) method, involving stages of needs analysis, system design, and prototype development. The needs analysis process is conducted through observation, interviews, and documentation to understand the actual conditions and user requirements. Subsequently, the system design includes system structure, user interface design, and feature modeling such as banjar profiles, activity calendars, announcements, and documentation galleries. Popoola et al. (2024) state that the prototype approach enables more adaptive system development based on user needs. Therefore, this method is applied to ensure that the system design can be iteratively refined according to the user context.

The theoretical contribution of this study lies in the development of an integrated concept between information systems and cultural representation within traditional communities. This research provides the perspective that information systems function not only as tools for data management but also as media for representing social and cultural identity. Practically, this study is expected to serve as a reference for developing Banjar Adat websites that support communication, information transparency, and digital documentation of activities. Furthermore, a culture-based technological approach is considered capable of strengthening community sustainability in the digital era, as explained by Pratama & Hasan (2026). Thus, this research contributes to supporting digital transformation based on local wisdom

LITERATURE REVIEW

Information Systems and Digital Transformation in Social Communities

Information systems are designed to manage, process, and present information to support decision-making and organizational activities. In the context of social communities, information systems play an important role in improving communication efficiency and information transparency. According to Soelistianto & Muthmainah (2022), information systems function not only as technical tools but also as strategic instruments in supporting digital-based organizational transformation. In line with this, research by Young et al. 2022) shows that the implementation of web-based information systems can enhance information accessibility within community-based environments. In Indonesia, the implementation of information systems in local communities still faces limitations in integrating user needs and social context (Budiarto et al., 2024). Therefore, the development of contextual information systems is essential to address the specific needs of local communities.

Cultural Digitalization and Representation of Local Identity

Cultural digitalization refers to the use of technology to document, preserve, and disseminate cultural values in digital form. In the era of globalization, cultural digitalization has become an important strategy for maintaining the sustainability of local identity. Research by Lukita et al. (2024) emphasizes that digital technologies can strengthen community engagement in cultural preservation through interactive media. In addition, research by Permatasari & Wicaksono (2026) indicates that cultural digitalization in Indonesia remains largely documentary in nature and has not optimally represented social values. Effective digital representation should be able to reflect social

activities, collective values, and community identity in a contextual manner. This suggests that digital system development must consider cultural representation aspects, not merely information storage.

Smart Community and Smart Banjar Concept

The concept of smart community has evolved as an integrative approach that combines technology, society, and governance to improve quality of life. In the local context of Bali, this concept has developed into Smart Banjar, which emphasizes the use of technology to support the social and economic life of traditional communities. Baskara Joni et al. (2024) explain that Smart Banjar is a strategic approach that integrates information and communication technology to enhance digital literacy, transparency, and community participation. Furthermore, research by George & George (2024) shows that the implementation of smart community concepts can improve community welfare through the optimization of local resources supported by technology. However, the implementation of this concept still requires digital systems that align with local cultural characteristics. Therefore, the development of a Banjar Adat website can serve as an initial step in realizing the Smart Banjar concept in practice.

Community-Based Website Development

A website is one of the most effective digital media for delivering information and facilitating communication between organizations and the community. In a community context, a website functions as both an information hub and a platform for documenting activities. Research by Ng et al. (2024) indicates that community-based websites can increase user engagement when designed according to user needs and characteristics. Virvou (2023) state that the success of community websites is largely determined by interface design, ease of access, and the relevance of the content presented. However, most website developments still focus on technical aspects and have not fully integrated social and cultural values. This presents a challenge in designing websites that are not only informative but also culturally representative.

METHOD

Research Design and Approach

This study employs a Research and Development (R&D) method with a dominant qualitative approach complemented by a simple quantitative approach at the evaluation stage. The R&D approach was selected because this study aims to design and develop a conceptual model of a website-based information system as a digital representation of the social life of Banjar Adat communities. According to Kasoju & Vishwakarma (2025), the R&D approach enables researchers to develop a product while simultaneously testing its suitability with user needs. The qualitative approach is used to explore user needs and the socio-cultural context in depth, while the quantitative approach is applied to measure the feasibility level of the proposed system design. The research design adopts a Prototype development model, as it allows iterative refinement of the system based on user feedback.

Population and Sampling Technique

The population in this study consists of all members and administrators of the Banjar Adat as the object of study, while the sampling technique employs non-probability sampling with a purposive sampling approach. This technique is selected because the participants must possess a clear understanding of the activities and information needs within the banjar environment. A total of 8 participants were involved in this study, consisting of 1 head of the banjar (kelian), 1 secretary, and 6 community members. According to Alordiah & Oji (2024), purposive sampling is appropriate for qualitative research as it enables the selection of informants who are relevant and have in-depth knowledge of the phenomenon under investigation. The relatively small number of participants is intended to support in-depth data exploration rather than statistical generalization.

Data Collection Techniques and Instruments

Data collection in this study is conducted through observation, semi-structured interviews, documentation, and questionnaires. Observation is carried out to understand the actual condition of information management within the Banjar Adat, while interviews are used to explore user needs and perceptions of the proposed system. The interview instrument is developed based on the concept of information system requirements and cultural representation derived from previous studies. Documentation is utilized to collect supporting data such as organizational structures, community activities, and cultural archives. In addition, questionnaires are administered during the evaluation stage to assess the usability aspect of the proposed system design. Instrument validity is tested

through expert judgment, while reliability is measured using Cronbach's Alpha, as recommended by Khidhir & Rassul (2023) in social research measurement.

Research Procedure

The research procedure is carried out systematically in several stages. The first stage is needs analysis, conducted through observation and interviews to identify problems and user requirements. The second stage is system design, which includes the development of a conceptual model, system architecture design, and user interface design based on UI/UX principles. The third stage is prototype development, where the initial system design is created in the form of a prototype that can be tested by users. The fourth stage is evaluation and refinement, which is conducted based on user feedback on the developed prototype. According to Riyanti et al. (2024), the prototype approach enables a more adaptive system development process through iterative interaction between design and evaluation.

Data Analysis Techniques

Data analysis techniques in this study are adjusted according to the research approach. Qualitative data obtained from interviews and observations are analyzed using thematic analysis, which involves data reduction, categorization, and conclusion drawing. This analysis aims to identify patterns of user needs and socio-cultural aspects that need to be represented in the system. Meanwhile, quantitative data from questionnaires are analyzed using descriptive statistical analysis to determine the level of user acceptance and system feasibility. Data processing is carried out using software tools such as Microsoft Excel and SPSS, which are commonly used in social research for quantitative data analysis (Singh, 2022). Thus, the combination of qualitative and quantitative analysis is expected to produce a system design that is valid, relevant, and aligned with the needs of the Banjar Adat community.

RESULTS

Results of System Requirements Analysis (Needs Analysis Stage)

The results of the system requirements analysis were obtained through observation and semi-structured interviews as part of the qualitative approach within the Research and Development (R&D) model. The findings indicate that information management within the Banjar Adat environment remains conventional and has not been optimally digitalized. Information about activities is typically delivered through verbal communication and physical media such as bulletin boards, resulting in limited information reach and unstructured documentation. In addition, the absence of a digital system leads to unsystematic data storage, making it difficult to retrieve information when needed. Thematic analysis of the interview results reveals that the primary user needs focus on fast, centralized, and sustainable access to information. Therefore, this stage emphasizes the importance of developing a website-based system as an appropriate solution to meet user needs.

The supporting interview findings are as follows: The interview results indicate that: *"Information is usually shared during meetings or through bulletin boards, so sometimes people miss it if they are not present"* (H-01, January 12, 2026). In addition, another informant stated: *"Activity documentation is mostly stored on personal phones, so it is difficult to retrieve later"* (S-01, January 15, 2026). Similarly, a community representative mentioned: *"We need a platform that can be accessed anytime so we don't miss important banjar activities"* (C-02, January 18, 2026). Based on this qualitative analysis, it can be concluded that the system requirements include integrated information delivery, digital documentation management, and flexible accessibility. These findings serve as the foundation for the system design phase in the development model.

Results of Conceptual System Design (System Design Stage)

The system design stage was conducted based on the results of the requirements analysis using a conceptual approach within the prototype model. The results indicate that the system is designed with two main actors, namely the administrator and users, following the principles of user-centered design. The administrator is responsible for managing system data, while users are limited to accessing information, ensuring a clear and secure system structure. A modular approach is applied by dividing the system into components such as profile, activities, announcements, and gallery. This structure is intended to facilitate future development and enhance system flexibility. The design results demonstrate that the system aligns with the user needs identified in the previous stage.

The informants' responses to the system design are as follows: The discussion results indicate that: *"Having an admin manage the system makes everything more organized and prevents unauthorized changes"* (S-02, January 20, 2026). Additionally, another informant stated: *"What matters is that people can easily access the information*

without complicated login processes" (C-03, January 22, 2026). Meanwhile, the head of the banjar stated: *"This role division is effective, as someone is responsible while the community can simply access the information"* (H-02, January 24, 2026). These results indicate that the conceptual model meets the principles of simplicity, security, and accessibility. This aligns with the goal of developing an inclusive and user-friendly information system.

Results of User Interface Design (UI/UX Design Stage)

The user interface design was developed as part of the system design stage, emphasizing usability and cultural representation. The results show that the interface is designed to be simple, intuitive, and easy to understand by users with varying levels of digital literacy. Visual elements such as colors and icons are adapted to reflect Balinese cultural identity, strengthening the digital representation aspect. The navigation structure is designed to be linear and non-complex to minimize user errors. Additionally, the design supports accessibility principles, allowing it to be used by a wide range of users. Therefore, the UI/UX design focuses not only on aesthetics but also on user experience.

The user responses to the interface design are as follows: The interview results indicate that: *"The interface is simple, so it's easy to use even for those who are not familiar with technology"* (C-04, January 25, 2026). Another informant stated: *"The colors reflect Balinese culture, making it feel more familiar and relatable"* (C-05, January 26, 2026). Meanwhile, the secretary stated: *"The menus are clear, so users don't get confused about where to click"* (S-03, January 27, 2026). Based on these findings, the interface design meets both technical and cultural requirements. This confirms that the system effectively represents the digital identity of the Banjar Adat community.

Results of Prototype Development (Development Stage)

The development stage resulted in a prototype system as an initial implementation of the designed model. The prototype was developed using an iterative approach within the R&D framework, allowing continuous refinement based on user feedback. The results indicate that the prototype successfully represents all the main features required by users. The navigation system is simple, the interface is responsive, and it includes simulation features for data management by the administrator. The prototype serves as an initial validation tool before full system implementation. Therefore, this stage acts as a bridge between conceptual design and system realization.

The informants' responses to the prototype are as follows: The testing results indicate that: *"With this prototype, we can already imagine how the website will be used in the future"* (H-03, January 28, 2026). Additionally, another informant stated: *"The prototype is already clear, it just needs further development"* (S-04, January 29, 2026). Meanwhile, community members mentioned: *"It looks good and is easy to understand, just needs some additional features if necessary"* (C-06, January 30, 2026). These findings indicate that the prototype effectively fulfills its role as a validation and communication tool between researchers and users, confirming the effectiveness of the prototype approach in system development.

Results of Prototype Evaluation (Evaluation Stage)

The evaluation stage was conducted using a quantitative approach through questionnaires to measure system usability and user acceptance. The descriptive analysis results show that the system achieved high average scores across all evaluation aspects. The aspects of ease of use, clarity of information, and suitability to user needs are categorized as very good. These results indicate that the system meets user expectations. The evaluation also serves as the basis for further refinement before full implementation. Therefore, the findings demonstrate that the proposed system has a high level of feasibility.

The user responses are as follows: The evaluation results indicate that: *"This website will be very helpful for accessing banjar activity information in the future"* (C-07, January 30, 2026). Another informant stated: *"All the information is clear, so there's no need to ask the administrators repeatedly"* (C-08, January 31, 2026). Meanwhile, the head of the banjar stated: *"This could be a solution for better information management in the future"* (H-04, January 31, 2026). These findings indicate that the system has a high level of user acceptance and strong relevance to user needs. Therefore, the proposed website has significant potential as an effective digital medium for representing the social life of the Banjar Adat community .

DISCUSSION

The results of the study in the needs analysis stage indicate that information management within the Banjar Adat environment remains conventional and has not been optimally digitalized. This finding aligns with the concept of the digital divide in local communities, where limited access to and utilization of technology leads to low communication effectiveness (Raihan et al., 2025). Furthermore, this condition reflects the suboptimal integration of

information systems within culturally based communities, as explained by Jiwasiddi et al. (2024), who noted that traditional communities still tend to rely on conventional methods for information management. The findings of this study reinforce that the need for digital information systems is not only a technical necessity but also a social one. In contrast to previous studies that primarily focus on technological aspects, this study places user needs as the main foundation for system design. Therefore, these results contribute to understanding the importance of a needs-based approach in the development of community information systems.

At the system design stage, the results show that the conceptual model developed is based on user-centered design principles, with a clear division of roles between administrators and users. This approach is consistent with interactive system design theory, which emphasizes the importance of user involvement in the design process (Saadi & Yang, 2023). In addition, the use of a modular system structure aligns with modern system architecture concepts that prioritize flexibility and scalability (Santoso et al., 2026). These findings are also consistent with the study by Yong et al. (2023), which states that community-based systems should be designed simply to ensure ease of adoption by users. However, this study differs from previous research by integrating cultural aspects as a fundamental component of system design, which has not been widely explored. Thus, the resulting conceptual model not only fulfills technical requirements but also considers the socio-cultural context of users.

The results of the user interface design indicate that usability and cultural representation are key factors in enhancing user acceptance. This is consistent with user experience theory, which states that effective design must consider ease of use and contextual relevance (El Shamy, 2022). Furthermore, the integration of cultural elements into the design supports the concept of cultural computing, which emphasizes the importance of local values in digital systems (Chan et al., 2025). Previous research by Muhmad Asri et al. (2024) also demonstrates that culturally based design can improve user engagement in digital systems. The findings of this study reinforce that cultural representation is not merely an additional element but a critical factor in system success. Therefore, this study contributes to the development of system design approaches that focus not only on functionality but also on cultural identity.

In the prototype development stage, the results show that the iterative approach within the R&D model is effective in producing a system that aligns with user needs. This finding is consistent with software development theory, which emphasizes the importance of iterative development in improving system quality (Sanmocte & Costales, 2025). Additionally, the use of prototypes as validation tools aligns with the study by Wang et al. (2023), which highlights that prototypes can enhance communication between developers and users. In this study, the prototype serves as a visualization tool that helps users better understand the system design. The distinction of this study from previous research lies in its focus on traditional communities as the primary users of the system. Therefore, these results indicate that the prototype approach is highly effective in developing community-based information systems.

The evaluation results indicate that the system achieves a high level of user acceptance, as reflected in usability scores categorized as very good. This finding is consistent with the Technology Acceptance Model (TAM), which states that perceived ease of use and usefulness significantly influence user acceptance (Ibrahim & Shiring, 2022). In addition, research by FakhrHosseini et al. 2024) shows that systems designed based on user needs tend to achieve higher adoption rates. However, this study also finds that cultural factors play a significant role in influencing system acceptance, which is not extensively addressed in traditional TAM frameworks. This suggests the presence of additional factors affecting technology acceptance in the context of traditional communities. Therefore, this study contributes to the development of a more contextualized understanding of technology acceptance theories.

Overall, the findings of this study indicate that the development of a website-based information system for Banjar Adat serves not only as an information medium but also as a digital representation of social life within the community. This aligns with the concept of digital representation, which suggests that digital systems can function as a medium for representing social and cultural identity (Wheatley, 2024). Furthermore, this study supports the concept of Smart Community, which emphasizes the integration of technology to improve community quality of life (Al-Saidi & Zaidan, 2024). The main distinction of this study compared to previous research lies in the integration of information systems, local culture, and social life within a single framework. Therefore, this study provides both theoretical and practical contributions to the development of community-based information systems. Consequently, the findings have broad implications for supporting digital transformation based on local wisdom.

CONCLUSION

This study concludes that the development of a website-based information system for Banjar Adat is a relevant and necessary solution to address the limitations of conventional information management within traditional communities. As identified in the introduction, the absence of structured digital media has limited the effectiveness of information dissemination, documentation, and cultural representation. The findings from the needs analysis confirm that the Banjar Adat community requires a system that provides centralized, accessible, and sustainable information services. Furthermore, the conceptual system design, which is based on user-centered principles and modular architecture, has successfully aligned with user needs and socio-cultural characteristics. The integration of cultural elements into the system design also demonstrates that digital platforms can function not only as technical tools but also as media for representing social and cultural identity.

The results of prototype development and evaluation indicate that the proposed system has a high level of usability and user acceptance. The iterative prototype approach within the Research and Development (R&D) model has proven effective in producing a system design that is adaptive and responsive to user feedback. In addition, the findings highlight that cultural factors play a significant role in influencing user acceptance, complementing existing technology acceptance theories. Therefore, this study contributes both theoretically, by integrating information systems and cultural representation concepts, and practically, by providing a conceptual model that can be used as a reference for developing community-based digital systems. The proposed website design has strong potential to function as both an information medium and a digital image of social life in Balinese communities .

For future development, this study recommends the implementation of the designed system into a fully functional website, followed by broader testing involving a larger number of users. Further research may also explore the integration of advanced features such as mobile accessibility, real-time communication, and digital service integration to support community activities. In addition, continuous digital literacy programs are needed to ensure that the community can effectively utilize the system. By doing so, the development of the Banjar Adat website can contribute to sustainable digital transformation and strengthen the role of local wisdom in the modern technological landscape.

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